

APPARATUSES AND METHODS FOR IN-SITU OPTICAL ENDPOINTING ON WEB-
FORMAT PLANARIZING MACHINES IN MECHANICAL OR
CHEMICAL-MECHANICAL PLANARIZATION OF MICROELECTRONIC-DEVICE
SUBSTRATE ASSEMBLIES

ABSTRACT

Planarizing machines, planarizing pads, and methods for planarizing or endpointing mechanical and/or chemical-mechanical planarization of microelectronic substrates. One particular embodiment is a planarizing machine that controls the movement of a planarizing pad along a pad travel path to provide optical analysis of a substrate assembly during a planarizing cycle. The planarizing machine can include a table having an optical opening at an illumination site in a planarizing zone and a light source aligned with the illumination site to direct a light beam through the optical opening in the table. The planarizing machine can further include a planarizing pad and a pad advancing mechanism. The planarizing pad has a planarizing medium and at least one optically transmissive window along the pad travel path. The pad advancing mechanism has an actuator system coupled to the pad and a position monitor coupled to the actuator system. The actuator system is configured to move the planarizing pad over the table along the pad travel path, and the position monitor is configured to sense the position of a window in the planarizing pad relative to the opening in the table at the illumination site.